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(54) **Laser irradiation apparatus, laser irradiation method, beam homogenizer, semiconductor device, and method of manufacturing the semiconductor device**

(57) A beam homogenizer configured for converting an originally rectangular beam into a linear shape having a two stage energy distribution in a width direction comprising a first beam width (w1) having a first energy density (E1) and a second beam width (w2) having a second energy density (E2), the beam homogenizer comprising: an optical lens (501) for dividing an incident laser beam in width direction into parts and enlarging the parts; and an optical system (204, 208) for synthesizing said parts of said laser beam divided by said optical lens in a width direction, whereby the synthesized laser beam has a two stage energy distribution in the width direction, wherein said optical lens (501) includes a plano-convex lens (602, 603, 604, 605) as a cylindrical lens and a plano-convex lens cut into halves (601, 606) perpendicular to its plane surface as a semi-cylindrical lens.

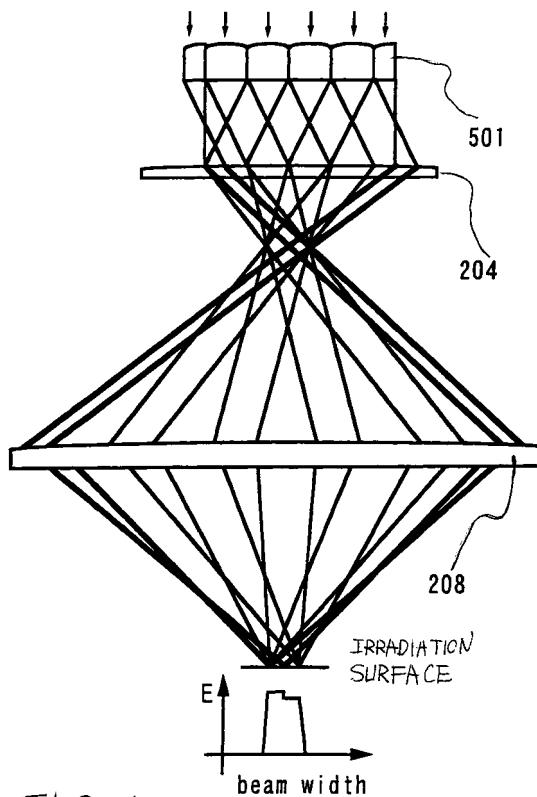


FIG. 5



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
Y	DE 196 32 460 C (MICROLAS LASERSYSTEM GMBH) 30 October 1997 (1997-10-30) * abstract * * column 1, line 61 - line 56; figures 1-3 * -----	1-34	INV. H01L21/20 G02B26/10 G02B27/10 H01L21/268
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Y	JP 10 074697 A (TOKYO SHIBAURA ELECTRIC CO) 17 March 1998 (1998-03-17) * column 2, line 3 - line 5; figures 2a-6 * * column 5, line 57 - line 60; claims 1-3 * -----	1-34	
			TECHNICAL FIELDS SEARCHED (IPC)
			G02B H01L
The present search report has been drawn up for all claims			
7	Place of search	Date of completion of the search	Examiner
	Munich	28 February 2007	Daffner, Michael
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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